

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (currently amended) A method for continuously coating a substrate in motion in the form of ~~such as~~ a metal strip made of steel, the coating formed being a ~~an ultra-fine~~ film of a thickness of between 10 and 100 nm, deposited on the substrate:

- from a solution containing nanoparticles of oxides,
 - in conditions of controlled pH,
 - said substrate being at a temperature higher than 120°C, the total duration of the deposition being less than 5 seconds, ~~preferably less than 1 second~~,
- characterised in that at least one chemical additive, called a “refiner”, is incorporated into said solution, said refiner having, mutatis mutandis, the effect of restricting the formation of said coating.

2. (currently amended) The method according to claim 1, characterised in that the ~~that~~ substrate to be coated is either a bare metal, ~~preferably steel, stainless steel (or “inox”), aluminium, zinc or copper,~~ or a first metal coated with a second metal, ~~preferably a strip of steel coated with a layer of zinc, aluminium, tin or an alloy of at least two of these metals.~~

3. (currently amended) The method according to claim 1, characterised in that the nanoparticles comprise oxides selected from the group consisting of, ~~preferably~~ SiO₂, TiO₂, ZrO₂, Al₂O₃, CeO₂, Sb₂O₅, Y₂O₃, ZnO, SnO₂ and ~~or~~ mixtures of these oxides, the nanoparticles being ~~are~~ hydrophilic and/or hydrophobic, having ~~have~~ a size of between 1 and 100 nm and being ~~are~~ in the solution with a content of between 0.1 and 10%, ~~and preferably between 0.1 and 1%.~~

4. (currently amended) The method according to claim 1, characterised in that the concentration of refiner is between 1 and 20 g per litre (g/L) of solution, ~~preferably between 5 and 10 g/L.~~

5. (currently amended) The method according to claim 4, characterised in that ~~a~~ the refiner used for the deposition of nanoparticles of silica is selected from the group of compounds consisting of ~~comprising~~ catechin and its derivatives, hydrofluoric and boric acids, borates, sodium and potassium carbonates and hydrogen carbonates, ammonium hydroxide and amines that are soluble in water.

6. (currently amended) The method according to claim 4, characterised in that ~~a~~ the refiner used for a deposition of nanoparticles of stannous or stannic oxide is selected from the group of compounds consisting of ~~comprising~~ borates, potassium carbonates and hydrogen carbonates, ammonium hydroxide and amines that are soluble in water.

7. (currently amended) The method according to claim 4, characterised in that ~~a~~ the refiner used for a deposition of nanoparticles of cerium and zirconium oxides is selected from the group consisting of ~~comprising~~ hydrofluoric, boric and carboxylic acids.

8. (currently amended) The method according to claim ~~4~~ [[7]], characterised in that the refiner used for a deposition of nanoparticles of cerium and zirconium oxides is selected from the group of compounds consisting of ~~comprising~~ formic, ascertic, ascorbic and citric acids.

9. (cancelled)

10. (currently amended) The method according to claim ~~39~~, characterised in that the pH of the solutions containing ~~based on~~ nanoparticles of SiO₂, SnO₂, TiO₂, ZnO or Sb₂O₅ is ~~alkaline and is preferably~~ between 9 and 13.

11. (currently amended) The method according to claim ~~39~~, characterised in that the

pH of ~~the solutions containing based on~~ nanoparticles of ZrO_2 , CeO_2 , SiO_2 or Sb_2O_5 is ~~acidic and is preferably between 1 and 5.~~

12. (cancelled)

13. (currently amended) The method according to claim 9, characterised in that, ~~in the case of~~ a surface layer of the substrate containing a component of zinc, aluminium, iron, tin, chrome, nickel or copper, and the pH is alkaline.

14. (currently amended) The method according to claim 9, characterised in that, ~~in the case of~~ a surface layer of the substrate containing a component of zinc, aluminium, iron, tin, chrome, nickel or copper, and the pH of the solution is acidic.

15. (previously presented) The method according to claim 1, characterised in that the deposit is formed by immersion of the substrate for a controlled period of time in an immersion tank comprising the solution.

16. (currently amended) The method according to claim 1, characterised in that the deposit is formed by spraying the solution onto the substrate by means of a nozzle, which is i.e. a device, assisted or not, with gas under pressure, that sprays droplets of the solution.

17. (previously presented) The method according to claim 1, characterised in that the deposit is formed by deposition of the solution on the substrate by means of a roller.

18. (currently amended) The method according to claim 1, characterised in that the solution that comes into contact with the strip is kept at a temperature lower than 100°C ~~and preferably lower than 80°C .~~

19. (previously presented) The method according to claim 1, characterised in that the temperature of the substrate at the start of the deposition is higher than 125°C and lower than 250°C .

20. (previously presented) The method according to claim 19, characterised in that, if the substrate already has a metallic coating before the treatment, the temperature of the substrate at the start of the deposition is higher than 125°C and lower by 30 to 100°C than the melting point of the coating metal.

21. (currently amended) The method according to claim 20, characterised in that, if the substrate has a metallic coating made ~~by immersion, as for example in galvanisation~~ by immersion, the deposit is formed just after the deposition of the metallic coating, before the substrate cools down.

22. (currently amended) The method according to claim 21, characterised in that, ~~in the case of a substrate liable to a too high level of oxidation for this to be eliminated during the deposition,~~ the substrate is protected from excessive contact with air by means of a neutral gas such as nitrogen or argon.

23. (previously presented) The method according to claim 20, characterised in that the deposition is limited in time by varying the depth of immersion in the case of deposition in a solution or the length sprayed in the case of spraying the solution with nozzles.

24. (currently amended) The method according to claim 1, characterised in that the solution is an aqueous solution or comprises any other solvent capable of ~~effectively~~ dispersing said nanoparticles.

25. (currently amended) The method according to claim 1, characterised in that agents for the improvement of resistance to corrosion and/or adhesion to the substrate or to a the paint and/or to improve the glide during formation are added to the solution.

26. (currently amended) The method according to claim 1, characterised in that the coated substrate may be rinsed after post-treatment by means of water or of a solution based on organic silanes or carboxylic acid capable of forming a ~~with an ability to form a strong~~ link with the organic.

27. (previously presented) The method according to claim 1, characterised in that it comprises the means for: continuously measuring and regulating the pH, ensuring the replenishment of the solution and the elimination of surplus products of the reaction, ensuring the homogeneous mixture of the bath so as to avoid turbulence on its surface.

28. (previously presented) The method according to claim 15, characterised in that temperatures of the strip and of the bath, the time the strip remains in the bath, the concentration of nanoparticles in the bath and the pH of the bath are controlled.

29. (previously presented) The method according to claim 16, characterised in that the temperature of the strip, the length of spraying time, the concentration of nanoparticles in the solution sprayed, the spraying flow and the pH are controlled.

30 – 32 (cancelled)

33. (new) The method according to claim 1, wherein the total duration of the deposition is less than 1 second.

34. (new) The method according to claim 2, wherein that substrate to be coated is either steel, stainless steel, aluminium, zinc or copper, or a strip of steel coated with a layer of zinc, aluminium, or tin.

35. (new) The method according to claim 3, wherein the nanoparticles are in the solution with a content of between 0.1 and 1%.

36. (new) The method according to claim 4, wherein the concentration of refiner is between between 5 and 10 g/L of the solution.

37. (new) The method according to claim 18, wherein the solution that comes into contact with the strip is kept at a temperature lower than 80°C.